

A New Era of Signal Processing

It is no accident that Xilinx® FPGAs serve an increasingly vital role in the design and development of today's most demanding digital signal processing (DSP) systems. Superior performance, system-level cost, power efficiency, faster time to market, and unrivaled flexibility are the hallmarks of FPGA-based DSP designs – value propositions that have found increasingly appreciative reception among leaders in markets like the communications industry.

Driven by the global demand for higher quality, higher bandwidth, and inexpensive wired and wireless communications of voice, computer, and video data, the number and complexity of new communications standards has grown exponentially. This is in large part because of the need for interoperability and data exchange across myriad layers of legacy and next-generation networks. Keeping pace with these standards and the extremely critical price/performance/power ratios they pose has been anything but trivial for system vendors. Nonetheless, the flux continues to produce opportunities for industrious innovators willing to tackle the challenge.

In the dynamic markets served by high-performance DSP solutions, the inherent flexibility of the FPGA equates to:

- Faster time to market with leading-edge algorithmic solutions and standards implementations
- Lowered operational costs with easy-to-perform remote adaptation to unforeseen environmental and functional changes
- Reduced capital expenditures due to extended life cycles for existing designs
- Easy migration to keep pace with changing customer demands and market requirements

In This Issue

This high-performance DSP edition of *Xcell Journal* offers several interesting – and in some cases out of this world – applications of high-performance FPGA-based DSPs. For example, the cover story shows how several UC Berkeley astronomers programmed the BEE2 platform using a programming environment that leverages Linux, Xilinx System Generator, and Xilinx EDK for advanced radio telescope applications. Other articles discuss the growing ease of programming an FPGA-based DSP design, interesting system-design challenges using development platforms for FPGA-based image processing applications, analyzing different hardware/software partitioning schemes to boost wireless subsystem performance, designing and verifying the CABAC functionality of an H.264 video encoder with System Generator for DSP, and an efficient implementation of audio algorithms in programmable logic.

As Jeff Bier, president of BDTI, notes, “Today, FPGAs play an increasing role in a wide range of DSP applications. We expect this trend to continue over the next several years.” Xilinx sees an ever-broadening horizon for high-performance DSP processing solutions in the demanding digital communications, multimedia video and imaging, and defense systems markets. And Xilinx XtremeDSP™ solutions offer support every step of the way, with advanced DSP-optimized FPGA devices, hardware and software development tools, development kits, and evaluation platforms, as well as comprehensive training and support to ensure your success.

We hope you enjoy this issue.



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